

ing, Why not turn the darn things loose and let them raid the crab pots for themselves? That way we can eliminate the middleman. . . .

But this is uncharitable, for it is by a switch on the above that we get the octopuses in the first place — thanks due directly to the Fisherman's Wharf trade! *P. apollyon* lives up to his namesake in one respect, matching his specific monicker with the nickname "Hijacker of the Sea." Crab-fishermen doubtless have even stronger names for these cancrorhagous molluscan cephalopods (if that trinomial is properly intoned it sounds like an epithet) — at any rate, it is a certain Monterey crab-fisherman to whom the Aquarium is indebted for its supply of giant octopi. For crab or cancrorhile, a crab pot is a good deal easier to get into than out of.

The octopus is a pioneer of jet propulsion. Expelling water from a jet-like siphon puts him in high instantly — the pickup is terrific. But unfortunately there is no corresponding hydraulic brake system. When a four-foot octopus takes off by JATO in a five-foot tank, something has to give. The big fellow in Steinhart captivity is developing a large, bald, white spot on the top of his head. Prolonged activity of this type inevitably reduces the cephalopod survival value to zero.

A fact our friend the crab-fisherman might keep handy as he opens up his pot is that octopuses have a biting "beak" inside the opening at the base of the tentacles, which is backed up by powerful submaxillary poison glands that enable it to inject venom as it bites its prey. The vacuum cups lining the tentacles have tremendous suction power. Nevertheless, there are few substantiated records of an octopus attacking a human being. Its nervous system is very complex — a reason, perhaps, why it is difficult to keep an octopus in captivity. The eyes are highly developed, similar in structure to the human eye. The female deposits her eggs under a rock, guarding them carefully until they hatch after about two and one-half months.

Some full-grown octopi are only an inch long; others may have a tentacle spread of 14 feet and weigh 100 pounds. The largest octopus-like animals are giant squids which sometimes measure 55 feet and weigh 30 tons. Squids, however, have ten tentacles instead of eight. Other molluscan relatives of the octopus are snails, clams, oysters, tooth shells, chitons, and cuttlefish.

Not all our octopuses habitually knock themselves out against their tank walls. Some are brighter, even learning to respond to certain colors, under the stimulus of food. So there is some assurance that, thanks to Leslie Salt Co., the Steinhart Aquarium will always have octopuses and other interesting live marine invertebrates to show the public and to study scientifically.

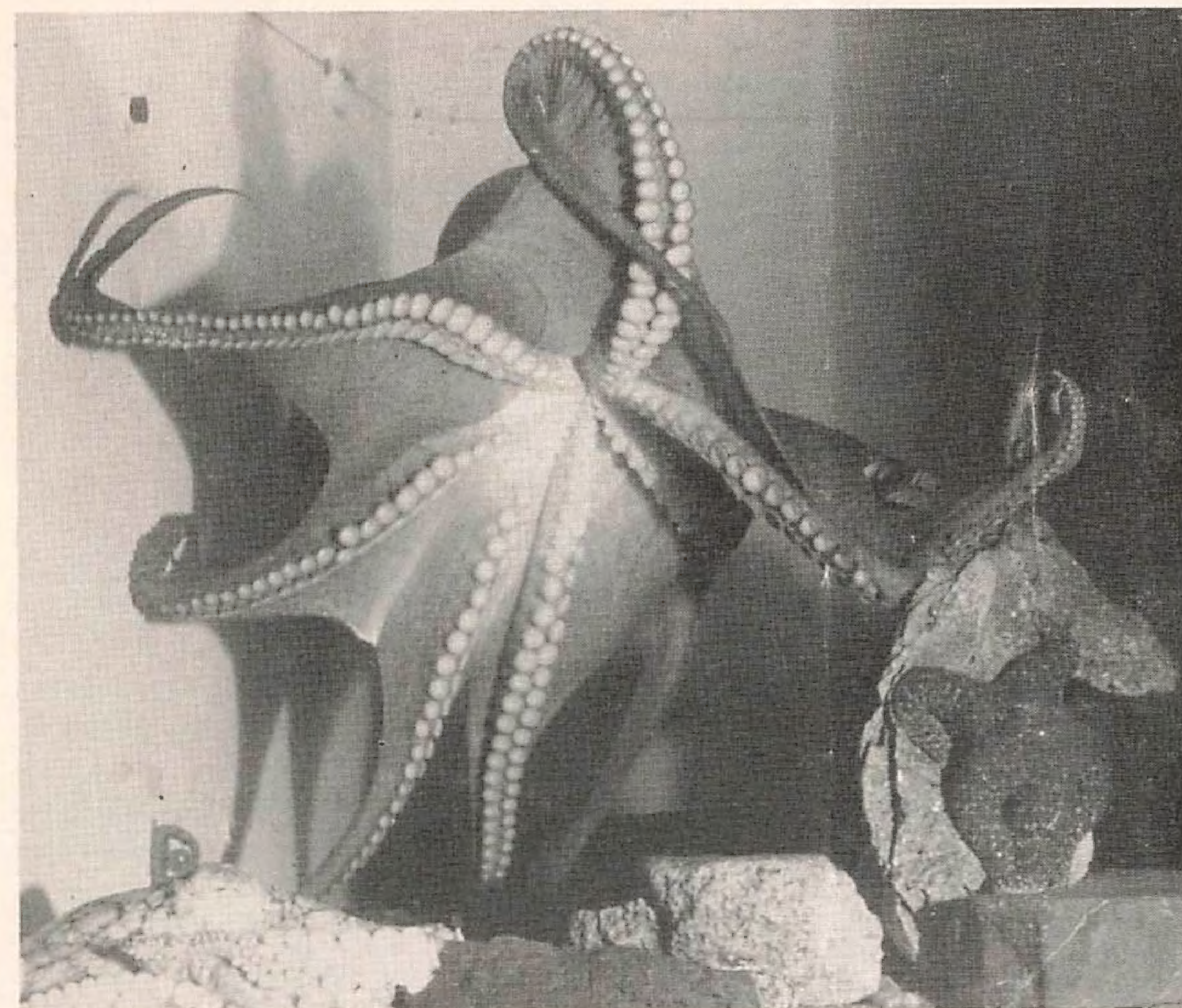
#### APPLICATIONS FOR MEMBERSHIP

NOTICE is hereby given to all Corporate Members that the Council has approved the applications of Mr. John H. Bruns, Mr. Lester B. Johnson, Mr. Arthur Jolly, Mr. Kenneth D. Jones, and Mr. Paul W. Klipfel for MEMBERSHIP in the California Academy of Sciences. If no objection to the election of these applicants be received at the office of the Academy within two weeks after January 31, they will be considered elected.

# ACADEMY NEWS LETTER

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Frank L. Rogers

#### LESLIE, THE OCTOPUS

Note his vacuum-cup tires

(See page 3)

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# CALIFORNIA ACADEMY OF SCIENCES

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## January Announcement

THE REGULAR JANUARY MEETING of the California Academy of Sciences will be held in North American Hall, West Wing of the Academy buildings in Golden Gate Park, on Wednesday evening, January 31, 1951, at 8 o'clock. Opening the spring series of lectures on the Walter B. Scaife Foundation, Mrs. Lucie Palmer will present an Audubon Screen Tours lecture and film entitled

### UNDERWATER KINGDOM

Down to the sea in a diving helmet went Lucie Palmer, a Missouri girl who had to be shown that those amazing things people said were under the water really existed. Then to convince her friends, from Missouri, she went in again—with a special camera for undersea motion pictures. Besides that, Lucie Palmer put her art training to good account, working out a method of painting in oils under the salt water. Her paintings have now been shown nationally, and the American Museum of Natural History in New York has put on a special exhibition of her work.

A member of the National Society of Women Geographers, Lucie Palmer has served as scientific assistant on many expeditions. Since she and her husband began their unusual pursuits more than a decade ago, the creatures of the reefs and the land beneath the tide have become as familiar to her as friends; the submerged valleys and hills, to the depth sunlight strikes through the hydrosphere, are the locale of her paintings and color motion pictures. These are, equally, works of art and scientific documents.

Where the waters are blue and clear, Lucie and Vincent Palmer and their specially designed camera meet face to face with sea horses, an octopus throwing out its ink barrage, starfish strolling along on all 1,000 tube feet, giant jellyfish with multicolored tentacles like fragile maypoles, the sergeant major—"world's bravest animal," toadfish, angel fish, porpoises, rays, stingrays, sharks, conchs, trunkfish, barracuda, doctorfish, schoolmasters, cowfish—an assortment of strange characters living in a world practically all of us never see.

An authentic record, the filming of this underwater world is a significant contribution to science, to our knowledge of a great and important reservoir of natural resources we constantly depend upon—the sea. Lucie Palmer relates that world of water to our own daily lives. "Underwater Kingdom" is an adventure and an experience in beauty.

The public is cordially invited.

## EIGHT-POINTED STARS

IF THE STEINHART AQUARIUM were ever faced with a lack of attendance, which it isn't—ten or twelve thousand a day keep that famous institution from feeling neglected—it would only have to announce an octopus. While waiting for some professor of psychology to turn in a paper on the mesmeric tropism of *Homo sapiens* toward *Polypus apollyon*, given an intervening layer of plate glass, the man in charge of the Steinhart Aquarium, Dr. Earl S. Herald, is making the most of a new opportunity to study the psychology of octopuses. (Merriam-Webster, *New Collegiate Dictionary*, p. 582, **oc'topus**, pl. oc'topuses, with octo'podes second and octo'pi third choices.)

Octopuses, the Steinhart people have lamented heretofore, just wouldn't keep. Then along comes Leslie Salt Co., ready to finance most generously, in the interests of science and the general public, an experiment in keeping saltwater invertebrates alive for exhibit. A refrigerated salt water system was designed to keep four existing Aquarium tanks within a temperature range of 49-54° F., and was constructed and installed by the Nels Rosberg Company of San Francisco. Last November there was a formal dedication for the engineering works and special devices, and an informal party in the Aquarium for Leslie Salt Co. officials, Academy trustees and officers, the press, other specially invited octoposcopists (to use the word Dr. W. I. Follett, Curator of Fishes, coined for people who view octopi), and three octopi.

When, after this affair, Dr. Herald's insights were realigned and in normal focus once more, that aquatic biologist took up octoposcopy in earnest. What he and his staff now have to report on *Polypus* may be in part, to most of us, news of the man-bites-dog—or human-entwines-self-around-octopus—variety. It will surely surprise the common man to learn, for example, that the common octopus is very shy; that he blushes when excited; that when frightened he may even break out in large "goose bumps" all over his head; that he prowls under cover of night, skulking in dark corners during daylight hours, in octopodal fear—not of humankind, probably, such being rather less than common in *Polypus*' natural environment—but of the deadly moray eel.

If worst comes to worst, and the savage muraenid is seen eeling out of his rock crevice, *P. apollyon* (who misnamed him after Bunyan's demon?), raising his goose pimples and turning red in alarm, puts his trust in an old adage—"the pen is mightier than the sword." At least, one might infer that his concealed and only weapon is a king-size Waterman, judging by the prodigious amount of "ink" with which he can suddenly cloud the issue and screen his discreet retirement from the field. With his sense of smell paralyzed, the moray is at a loss for about two hours until the ink's effect wears off.

A propensity of the octopus under somewhat anxious observation in the Steinhart Aquarium is his expensive appetite for live crab, at the rate of four to ten crabs per week per hungry octopus. In season, in competition with the Fisherman's Wharf trade for the limited intake of Coast crab pots, this puts a measurable strain on the Steinhart budget. We wonder if there are not fleeting moments when the necessarily expense-conscious Curator catches himself think-